



Nebraska Public Power District

Always there when you need us

GERALD GENTLEMAN STATION UNITS 1&2
FLUE GAS DESULFURIZATION SYSTEMS



Specification G-5301
Issue: For Comments, Rev. 0
December 31, 2009
Project No. 12194-004

SECTION 223000 PLUMBING EQUIPMENT

PART 1 – GENERAL

101. EXTENT

- 101.1 The intent of this specification is to define the minimum requirements for plumbing equipment normally encountered in plumbing piping systems; CONTRACTOR shall be responsible for furnishing and installing all plumbing equipment.
- 101.2 The WORK shall consist of the following:
- a. Electric water heaters
 - b. Electric water coolers
 - c. Emergency Eyewash
 - d. Miscellaneous accessories

102. RELATED WORK SPECIFIED ELSEWHERE:

- | | | |
|-------|----------------|---------------------------------|
| 102.1 | Section 033115 | Structural Concrete |
| 102.2 | Section 099115 | Coating Requirements |
| 102.3 | Section 220719 | Plumbing Piping Insulation |
| 102.4 | Section 221117 | Plumbing Piping and Specialties |
| 102.5 | Section 224000 | Plumbing Fixtures |

103. REFERENCE DOCUMENTS

103.1 General

- a. Standards, specification, manuals, codes and other publications of nationally recognized organizations and associations are referenced herein. Methods, equipment and materials specified herein shall comply with the specified and applicable portions of the referenced documents, in addition to federal, state or local codes having jurisdiction.
- b. References to these documents are to the latest issue date of each document, unless otherwise indicated, together with the latest additions, addenda, amendments, supplements, etc., thereto, in effect as of the date of this Contract.
- c. Abbreviations listed indicate the form used to identify the reference documents in the text.

103.2 AASHTO – American Association of State Highway Transportation Officials

103.3 ANSI – American National Standards Institute

ANSI A117.1 – Specifications for making buildings and facilities accessible to and usable by physically handicapped people

103.4 ASME - American Society of Mechanical Engineers

- a. B16.3 – Malleable Iron Threaded Fittings Class 150 NS 300
- b. B16.23 – Cast Copper Alloy Solder Joint Drainage Fittings - DWV



Nebraska Public Power District

Always there when you need us

GERALD GENTLEMAN STATION UNITS 1&2

FLUE GAS DESULFURIZATION SYSTEMS



Specification G-5301
Issue: For Comments, Rev. 0
December 31, 2009
Project No. 12194-004

- c. B16.29 – Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings – DWV
- d. Section IX – Welding and Brazing Qualifications
- 103.5 ASTM – American Society for Testing and Materials
 - a. A36 – Steel, carbon, cooled-rolled sheet, commercial quality
 - b. A53 – Pipe, Steel, Black and Hot-Dipped Zinc Coated, Welded and Seamless
 - c. A74 – Cast Iron Soil Pipe and Fittings
 - d. A120 – Pipe, Steel, Black and Hot-Dipped Zinc Coated (Galvanized), Welded and Seamless, for Ordinary Uses
 - e. A123 – Zinc (hot-dip galvanized) coatings on products fabricated from rolled, pressed, and forged steel shapes, plates, bars and strips
 - f. A167 – Stainless and Heat-resisting chromium-nickel steel plate, sheet and strip
 - g. A234 – Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures
 - h. A269 – Seamless and welded austenitic stainless steel tubing for general service
 - i. A525 – Specification for general requirements for steel sheet, zinc-coated (galvanized), by the hot-dip process
 - j. B32 – Solder Metal
 - k. B75 – Specification for Seamless Copper Tube
 - l. B88 – Seamless Copper Water Tube
 - m. B306 – Copper Drainage Tube (DWV)
 - n. B456 – Electro-deposited coatings of copper plus chromium plus nickel and nickel plus chromium
 - o. C425 – Compression Joints for Vitrified Clay Pipe and Fittings
 - p. D1785 – Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
 - q. D2235 – Solvent Cement for Acrylo nitrile – Butadiene – Styrene (ABS) Plastic Pipe and Fittings
 - r. D2241 – Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR)
 - s. D2213 – Thermoplastic Gas Pressure Pipe, Tubing and Fittings
 - t. D2466 – Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40
 - u. D2855 – Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings
 - v. F477 – Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- 103.6 AWS – American Welding Society
 - a. A5.8 – Brazing Filler Metal
 - b. D1.1 – Structural Welding Code
- 103.7 AWWA – American Water Works Association
 - a. C105 – Polyethylene Encasement for Ductile Iron Piping for Water and Other Liquids



Nebraska Public Power District

Always there when you need us

GERALD GENTLEMAN STATION UNITS 1&2

FLUE GAS DESULFURIZATION SYSTEMS



Specification G-5301
Issue: For Comments, Rev. 0
December 31, 2009
Project No. 12194-004

- b. C110 – Ductile – Iron and Gray – Iron Fittings 3 inches through 48 inches, for Water and Other Liquids
 - c. C111 – Rubber-Gasket Joints for Ductile Iron and Gray-Iron Pressure Pipe and Fittings
 - d. C151 – Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids
- 103.8 CISPI - Cast Iron Soil Pipe
301 – Cast Iron Soil Pipe and Fittings for Hubless Cast Iron Sanitary Systems
- 103.9 LIA – Lead Industries Association
- 103.10 NEMA – National Electrical Manufacturers Association
- 103.11 UL – Underwriters' Laboratories, Inc.



Nebraska Public Power District

Always there when you need us

GERALD GENTLEMAN STATION UNITS 1&2

FLUE GAS DESULFURIZATION SYSTEMS



Specification G-5301
Issue: For Comments, Rev. 0
December 31, 2009
Project No. 12194-004

PART 2 – PRODUCTS

201. MANUFACTURERS

Certain manufacturers' products are listed herein to ensure quality and/or type. CONTRACTOR shall provide equal products as tested by other manufacturers having good track records in the Industry.

202. QUALITY ASSURANCE

202.1 CONTRACTOR shall be responsible for inspection work as required or as needed.

202.2 DISTRICT may observe or inspect the work for full compliance with the requirements of this specification.

202.3 Any work found defective or not in compliance with this specification will be rejected and shall be replaced at no additional cost to the DISTRICT.

203. DELIVERY, STORAGE AND HANDLING

203.1 Materials shall be prepared for shipment in such a manner that quality and cleanliness will be maintained during shipment. All materials shall be adequately protected against damage during shipment. Products shall be shipped in manufacturer's original containers, undamaged, with seals and labels intact.

203.2 Material shall be delivered to the Project Site at such intervals to ensure uninterrupted progress of the Work. CONTRACTOR shall provide equipment and personnel to handle products by methods to prevent damage.

203.3 CONTRACTOR shall promptly inspect shipments to assure that products comply with requirements, quantities are correct and products are undamaged.

203.4 CONTRACTOR shall store material to permit easy access for inspection and identification. Keep material off the ground, using pallets, platforms or other supports. Protect material from corrosion and deterioration. Surfaces of material contaminated with foreign elements shall be cleaned prior to installation. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store products in weather protected enclosure under lock and key.

203.5 After equipment and accessories are installed, CONTRACTOR shall be fully responsible for protecting them from being damaged, during the balance of the construction period, or until accepted by DISTRICT. This shall include CONTRACTOR's responsibility for preventing all trades, whether employed by CONTRACTOR or other CONTRACTORS, from using fixtures and accessories as supports for scaffolding, ladders, or other detrimental uses.

204. ACCEPTABLE MANUFACTURERS AND PRODUCTS

CONTRACTOR shall use acceptable manufacturers and products as indicated in the specification or as approved by the DISTRICT. Acceptable manufacturers of the materials and products include only companies with good track records in the industry.

204.1 Acorn Engineering Co., City of Industry, CA 91744

204.2 Bradley, Menomonee Falls, WI 53051

204.3 Eljer, Plano, TX 75086.

204.4 Elkay Manufacturing Co., Oakbrook, IL 60521

204.5 Halsey Taylor, Freeport, IL 61032



Nebraska Public Power District

Always there when you need us

**GERALD GENTLEMAN STATION UNITS 1&2
FLUE GAS DESULFURIZATION SYSTEMS**

Sargent & Lundy

Specification G-5301
Issue: For Comments, Rev. 0
December 31, 2009
Project No. 12194-004

- 204.6 Haws Faucet Co., Berkley, CA 94701
- 204.7 Josam Company, Michigan City, Indiana 46361
- 204.8 McKinney Parker, Scranton, PA 18505
- 204.9 Oasis, Ebco Manufacturing Co., Columbus, OH 43213
- 204.10 Powers Regulators, Antioch, IL 60002
- 204.11 Speakman Co., Wilmington, DE 19899
- 204.12 State Industries, Inc., Ashland City, Tenn 37015
- 204.13 State Water Heaters, Ashland City, Tenn 37015
- 205. MATERIAL
- 205.1 General:
 - a. Certain manufacturers' products listed herein are made to ensure that the proper quality and/or type are provided. CONTRACTOR shall provide the products listed, or provide equal products by one of the listed manufacturers.
 - b. Unless otherwise specified, each of the fixtures/products listed will have a reference number after its generic name, e.g. Water Closet (WC1).
 - c. Reference numbers reflect the appropriate fixture/product to be provided.
- 205.2 Electric Water Heaters
 - a. Glass lined welded steel tank with factory assembled insulation; encased in metal outer jacket with baked-on enamel finish.
 - b. Size of heating element, voltage, wattage and size capacity as specified along with designation numbers corresponding to the gallon capacity of the heater.
 - c. Model numbers specified refer to products manufactured by State Water Heaters Inc.
- 205.3 Water Coolers

Water cooler types, designation number and model numbers are based on products manufactured by Oasis Co.
- 205.4 Emergency Eyewashes

Types, designation number and model numbers are based on products manufactured by Speakman Co. unless otherwise specified.

 - a. Emergency Eyewash (EE1)
 - a1. Type: Interior use.
 - a2. Model: SE-420
 - b. Emergency Eyewash (EE2)
 - b1. Type: Exterior use, frost-proof.
 - b2. Model: SS-440



Nebraska Public Power District

Always there when you need us

GERALD GENTLEMAN STATION UNITS 1&2
FLUE GAS DESULFURIZATION SYSTEMS



Specification G-5301
Issue: For Comments, Rev. 0
December 31, 2009
Project No. 12194-004

PART 3 – EXECUTION

301. INSTALLATION

Plumbing equipment shall be installed in strict accordance with the applicable codes and the manufacturers' printed instructions.

302. CLEANING

After installation is completed, CONTRACTOR shall thoroughly clean surfaces of plumbing equipment of all stains, markings, scratches and debris.

303. INSPECTION AND TESTING

303.1 Inspection by the DISTRICT

The DISTRICT may, during the course of the Work, inspect the various phases of work performed by CONTRACTOR in the field, for compliance with the requirements of this specification.

303.2 Inspection by CONTRACTOR

- a. Review of material for compliance with the specification.
- b. CONTRACTOR shall be responsible for, and shall pay his own costs for, the specified inspection.
- c. CONTRACTOR shall maintain a complete detailed record of the inspections and tests performed by CONTRACTOR in a manner approved by the DISTRICT.

303.3 Extent and Method of Inspection

Conform to the Acceptance Standards of the specified material.

303.4 Acceptance of the Work by the DISTRICT shall not relieve the CONTRACTOR from full responsibility for the Work.

END OF SECTION 223000